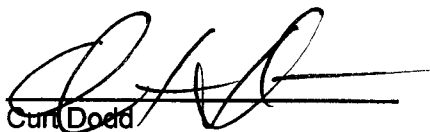


In re Application of: AZAD, Mina M.  
Serial No.: 10/032,014  
Filed: 31-12-2001  
Title: LABEL SWITCHED PATH OAM WRAPPER  
Group: 2144  
Examiner: GEREZGIHER, Yemane M.  
Attorney Ref.: PAT 2224-2

Affidavit under 37 CFR 1.131

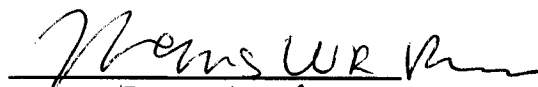
I, Curt Dodd, being duly sworn, depose and state:

- 1) I am the Intellectual Property Counsel at Nortel Networks Limited (NNL), presently responsible for this file.
- 2) The NNL Invention Disclosure for the present invention, attached hereto as Exhibit "A", was prepared no later than July 4, 2001.
- 3) The Invention Disclosure offered, inter alia, a description of the invention, problems solved by the invention and the commercial value of the invention.
- 4) On July 5, 2001, Allan Millard, IP Counsel for the NNL Intellectual Property Law Group at the time, sent a reply, attached hereto as Exhibit "B", acknowledging the receipt of the Invention Disclosure for the present invention.
- 5) The Invention Disclosure underwent an internal review process, and was approved for filing as a patent application, as evidenced in a letter sent by Allan Millard, on September 10, 2001, attached hereto as Exhibit "C".
- 6) Outside counsel was then engaged to draft the present application which was filed on December 31, 2001.
- 7) Overall, a review process and subsequent patent application preparation occurred between at least July 4, 2001 and the time the instant patent application was filed on December 31, 2001.
- 8) I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under 18 USC 1001 and that such willful false statements may jeopardize the validity of the instant application or any patent issued thereon.

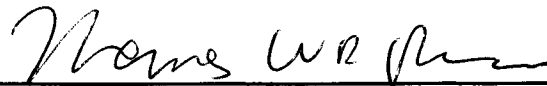
  
Curt Dodd

July 5/06  
Date

Sworn before me on the 5<sup>th</sup> day of July, 2006, at Ottawa, Ontario, Canada.

  
THOMAS PROWSE  
A Commissioner for Taking Affidavits

THIS IS EXHIBIT "A" TO THE  
AFFIDAVIT OF CURT DODD  
SWORN THIS 5<sup>TH</sup> DAY OF JULY, 2006



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A Commissioner for Taking Affidavits

**Nortel Networks Confidential & Privileged Information**

**Invention Disclosure Submission Reply**

	04 jul 2001
Label Switched Path OAM Wrapper	

----- Inventors -----

1561887	<b>HR Name:</b> AZAD, MINA M <b>Known As:</b> MINA <b>Email:</b> mazad@americasm01.nt.com <b>Mgr First Name:</b> KHALID <b>Mgr Last Name:</b> AHMAD <b>Mgr Global ID:</b> 1189445	<b>Location:</b> 3500 CARLING AVENUE NEPEAN ONTARIO K2H 8E9 CANADA <b>Location Code:</b> CAR <b>Dept:</b> CS67 <b>Phone:</b> 3932044 <b>Ext Phone:</b> <b>Fax:</b> <b>Ext Fax:</b> <b>MailStop:</b> 04371B30 <b>Citizenship:</b> CANADA	
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----- Attachments -----

<End of Attachments>

Were there additional attachments?	no	no
<b>KHALID AHMAD</b>		<b>LLOYD CARNEY</b>
WIRELESS & CORE NETWORKS		Core Networks
<b>CS00 PATENT PROPOSALS          REVIEW MEETING</b> 26 jun 2001 no		

<b>Keywords for Searching:</b>	
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Nortel Networks Confidential & Privileged Information

DO	
yes	28694

Title: Label Switched Path OAM Wrapper

Abstract: Built based on MPLS label stack encoding, Label Switch Path OAM wrapper is introduced to allow monitoring of individual segments of a Label Switch Path (LSP).

Introduction: This proposal introduces the concept of Label Switch Path OAM wrapper. The purpose of LSP OAM wrappers is to wrap LSP segments in logical tunnels whose end-points are OAM capable LSRs (for example ingress, egress, and merge-points or geographically significant LSRs). This functionality is required to sectionalize LSPs for fault isolation and loopback, especially in case of multipoint-to-point LSPs.

Methodology:

LSP wrappers are built as "stack attributes" of the original LSP. By using implicit peering techniques, one could make a logical mesh of OAM capable LSRs to communicate over the same connection and same facilities as the LSP that is under monitoring. This effectively allows OAM cells traverse along the LSP user-plane to the next OAM capable node. The binding between the OAM wrapper and the original LSP is updated when there is a change in LSP forwarding information because Label Distribution Protocols are mandated to distribute attributes when distributing and updating labels.

As opposed to ATM, MPLS LSPs are considered end-to-end and the concept of LSP segment is not well defined [RFC 3031 and RFC 3032]. The current MPLS user-plane OAM draft recommendations [Harrison-et-al same as ITU-T Y.170am/Y.1711] take advantage of the MPLS user-plane encoding [RFC 3032]. They propose use of a reserved MPLS label value (tentatively 14) at the bottom of the label stack to transport OAM information between an LSP ingress and egress. This use of label stack limits OAM processing to LSP ingress and egress LSRs and hence unburdens interim LSRs from OAM activities such as performance measurement and continuity check. Although the proposed solution has many merits, it lacks the fault isolation because OAM packets are effectively invisible to interim LSRs.

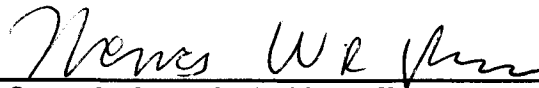
This invention allows for creating a wrapper around LSP segments between two MPLS layer adjacent LSRs that are capable of handling OAM packets. The wrapper turns the LSP segment to a logical LSP that is tied to the original LSP. This allows OAM packet traverse the original LSP but makes them visible to OAM-capable nodes (e.g. LSP merge-point).

There are no good solutions. The other alternative is to use Router Alert label and traverse the LSP hop-by-hop. But that does not guarantee traversing the same sequence of hops that are taken by the user-plane packets.

Specific recommendations that have been proposed to solve this problem:

-use of the LSP attribute concept to generate a wrapper.

THIS IS EXHIBIT "B" TO THE  
AFFIDAVIT OF CURT DODD  
SWORN THIS 5<sup>TH</sup> DAY OF JULY, 2006



---

A Commissioner for Taking Affidavits

INTELLECTUAL PROPERTY LAW GROUP  
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Nepean, Ontario, Canada. K2H 9E8  
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# NORTEL NETWORKS

*How the world shares ideas.*



## Memorandum

NORTEL NETWORKS CONFIDENTIAL &  
PRIVILEGED COMMUNICATION

**Date** July 5, 2001  
**To** Mina Azad  
**Copy** Khalid Ahmad  
**From** Allan Millard  
**Subject** Invention Disclosure Acknowledged  
Invention Disclosure No: 14758RO  
Title: LABEL SWITCHED PATH OAM WRAPPER

On behalf of Nortel Networks' Intellectual Property Law Group, I acknowledge receipt of the above-referenced invention disclosure. Please refer to this number in all future communications with the Intellectual Property Law Group pertaining to this disclosure. Thank you for taking the time to submit this invention disclosure.

Your invention disclosure will be reviewed in accordance with an invention disclosure review process approved by the appropriate LOB. After the review, you will be notified of the results.

Any disclosure outside Nortel Networks (not subject to a confidentiality agreement) could have adverse legal effects on the company's ability to secure patent rights for the invention. Thus, it is **extremely important that NO disclosure be made to anyone outside Nortel Networks** as this would jeopardize these rights. For example, any of the following can constitute a disclosure:

- Communication of the invention to anyone outside Nortel Networks (whether oral or written).
- Description of the invention in a paper, magazine article, Nortel marketing or technical support material, oral presentation at a conference, or anything similar.
- Submission of the invention to a Standards Body or for publication.
- Inclusion of the invention in a Government Contract Report or proposal.
- Sale or offer for sale of any product incorporating the invention.
- Use of the invention outside of Nortel Networks, even if the invention cannot be seen or observed.

Accordingly, it is important that you advise me well in advance of any planned public disclosure of the invention. Should any public disclosure of the invention have already occurred, or is planned to occur, please notify me so that appropriate steps can be taken to potentially avoid adverse legal consequences. In the meantime, we remind you that this invention is Nortel Networks confidential and proprietary information.

Sincerely,  
Allan P. Millard, IP Counsel

THIS IS EXHIBIT "C" TO THE  
AFFIDAVIT OF CURT DODD  
SWORN THIS 5<sup>TH</sup> DAY OF JULY, 2006



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A Commissioner for Taking Affidavits

**INTELLECTUAL PROPERTY LAW GROUP**

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Fax: (813) 768-3017 (ext. 398-3017)

**NORTEL  
NETWORKS**

*How the world shares ideas.*



**Date** September 10, 2001  
**To** Mina Azad  
**Copy** Khalid Ahmad  
**From** Allan Millard  
**Subject** Invention Disclosure Approved

Invention Disclosure No: 14758RO  
Title: LABEL SWITCHED PATH OAM WRAPPER

The above-identified invention disclosure was recently reviewed in accordance with the invention disclosure review process approved by the appropriate LOB, and the filing of a patent application was approved.

This application is being prepared by an outsource firm, and a patent professional at that firm will be contacting you to discuss the invention in order to prepare an accurate, detailed patent application. Once a regular patent application is filed, you may be eligible for a patent award under Nortel Networks' Corporate procedure No. 401.01.

As an inventor on a U.S. patent application you have duties which include the following:

1. Providing sufficient information on the invention in the patent application to enable one of ordinary skill in the area of the invention to make and use the invention; and
2. Disclosing prior art (e.g. public information or references) that is relevant to the invention.

The patent professional will further discuss both of these duties with you prior to filing the application.

While the patent application for the invention is a legal document, it is also a technical document. If it is technically deficient in describing the invention, it can impact the validity of the patent that issues from the application. You should therefore feel comfortable with and understand the patent application. If you do not, then please work with the patent professional to make the application technically accurate.

Please remember that the invention is Nortel Networks confidential and proprietary information and should be safeguarded against unauthorized disclosure. Any disclosure outside Nortel Networks (not subject to a confidentiality agreement) could have adverse legal effects on the company's ability to secure patent rights for the invention. Accordingly, it is important that you advise me well in advance of any planned public disclosure of the invention. Should any public disclosure of the invention have already occurred, or is planned to occur, please notify me so that appropriate steps can be taken to potentially avoid adverse legal consequences.

Thank you again for your submission. Your support of the invention disclosure process is greatly appreciated.